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Keeping an Uphill Edge: Managing Cleaning Behaviors at a Ski Shop

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ABSTRACT

Several behaviors in a ski shop were identified as being deficient using Austin's Performance Diagnostic Checklist (2000) and Daniels and Daniels' PIC/NIC Analysis (2004). During a 4-week baseline, 7 cleaning behaviors were monitored and 5 were subsequently targeted in an intervention package using an ABC design. The intervention included: a task clarification session, a posted behavioral checklist, graphic feedback of the group's performance for the previous week, and daily task-specific feedback. Immediately after the checklist was posted, the frequency of employee cleaning behaviors increased 52%. Cleaning behaviors increased an additional 12% after the implementation of daily task-specific feedback. Results suggest the interventions generalized to the 2 cleaning behaviors not mentioned in the task-clarification session.

ARTICLE

Researchers have noted the importance of the physical environment of retail stores. Bitner (1990) identified how the store physical environment impacts the store’s ability to achieve its customer service goals. Booms and Bitner (1981) described the store environment as a marketing tool whereby the use of the environment can communicate messages to the customer. Aubert-Gamet (1997) suggested that the physical surroundings of a retail store might be related to a customer’s intended use of the store for his or her needs. One key component of the physical environment

of a store that may impact customer behaviors is cleanliness. There is some evidence that cleanliness promotes customers' patronage of a retail store (Home, 2002). A dirty shop affects customer satisfaction (Gomez, McLaughlin, & Wittink, 2003; Johnston, 1997), which could lead to lower retail sales. Hygienically, a dirty shop is unhealthy for both customers and employees.

The PIC/NIC Analysis (Daniels & Daniels, 2004) helps to explain behavior by looking at the behavior's antecedents and consequences. According to Mager and Pipe (1984), not performing may indeed be more rewarding than performing (e.g., by avoiding response costs or getting more time to do other activities). Thus, the addition of consequences such as incentives and feedback may increase performance. Consequences of performance, which are positive (vs. negative), immediate (vs. future), and certain (vs. uncertain) increase the likelihood of a behavior happening again. Using this method of analysis can be very useful for adapting behaviors that are not assumed to stem from skill deficiencies (Daniels & Daniels, 2004; Mager & Pipe, 1984).

Previous research suggests that antecedents for cleaning behaviors in a retail store often include the presence of a manager, visibility of dirt or dust, and the prompt of another employee cleaning (Anderson, Crowell, Hantula, & Siroky, 1988; Geller, Eason, Phillips, & Pierson, 1980). Often the only consequence available for cleaning behaviors is occasional verbal feedback from a manager (Anderson et al., 1988).

Task clarification has been shown to be an effective antecedent intervention tool to inform employees about correct behaviors and standards established by management (Ludwig & Geller, 1991). For example, Austin, Weatherly, and Gravina (2005) used task clarification as a first step in increasing closing time behaviors, including cleaning tasks, by employees in a restaurant. Pampino, MacDonald, Mullin, and Wilder (2003) also used task clarification as a first step in increasing routine maintenance behaviors, including cleaning, in an art supply retail store. According to Mager and Pipe (1984) precise definitions of specific cleaning behaviors should be included in the package intervention to inform all employees of the proper cleaning behaviors and therefore reduce any obstacles to performance based on a lack of task knowledge or unclear management expectations.

Once task clarification describes the behaviors required, a visual prompt for cleaning can be established. The use of employee checklists has been shown to increase employee cleaning behaviors in research by Anderson, Crowell, Sponsel, Clarke, and Brence (1983), and by Pampino, Heering, Wilder, Barton, and Burson (2003) in which daily checklists served as a prompt for employees for cleaning and stocking behaviors in a coffee shop after a task-clarification meeting was held.

Another study by Anderson et al. (1988) used a package intervention of task clarification and posting individual feedback for monitoring cleaning behaviors in a student-managed bar. Following baseline,

three different groups of employees were exposed to task clarification and then the posting of individual feedback. After the implementation of both the task clarification and the posted feedback, cleaning behaviors increased significantly.

Many have argued that the design of an intervention is optimized when researchers and practitioners consider the environment in which the intervention will be implemented (Austin, 2000; Geller, 2002; Glenn, 1988; Redmon &Mason, 2000). During an analysis using Austin's Performance Diagnostic Checklist (2000) the employees and managers at the host store of the current study described a culture among the store employees as being cohesive and dependent upon teamwork. Therefore, it was decided that group-based consequences (i.e., frequent group feedback) would be appropriate because employees would be accountable to each other versus being accountable to a manager (Ludwig & Geller, 2001). Delivering consequences in this manner drew on the cohesive nature of the organization.

Thus, along with task clarification and posted behavioral checklists, the third component of this study's package intervention was graphic group feedback. Feedback of this nature has been used extensively (Alvero, Bucklin, & Austin, 2001; Jones, Morris, & Barnard, 1986; Ludwig & Geller, 1991, 1997; Nicol & Hantula, 2001; Stephens & Ludwig, 2005). It has been suggested that more frequent feedback yields the most consistent behavior change effects (Balcazar, Hopkins, & Suarez, 1985) and a combination of daily, weekly, and monthly feedback are associated with the most consistent effects on behavior change (Alvero, Bucklin, & Austin, 2001). Feedback in the present study was initially delivered weekly then adapted to be delivered daily.

The graphic group feedback in the present study only provided an aggregated percentage of cleaning outcomes observed after closing. When the second feedback phase began, the feedback specifically listed the cleaning behaviors that were not adequately completed the previous day. A similar approach was used by Hawkins, Burgio, Langford, and Engel (1992), who used graphic feedback summarizing the data of staff behaviors in a nursing home. They later added written feedback on the patient-service assignments over the previous 3-month period. When written feedback was added, substantial improvements in the number of patient-service assignments were observed.

The current study used a package intervention of task clarification, a checklist, weekly group graphic feedback, and a second intervention of written task-specific feedback to provide the antecedents and consequences required to improve employee cleaning behaviors.

In addition to examining the behaviors subjected to direct intervention, Ludwig and Geller (1991, 1997, and 1999) state that certain interventions can also have a response generalization effect on other behaviors that are not specifically identified in the intervention plan. Their data showed that interventions which target a set of behaviors can generalize to other nontargeted

behaviors if those behaviors had been associated by other contingencies in the past (see Ludwig, 2001; Geller, 2001; Austin & Wilson, 2001 for an extensive discussion on response generalization). This would suggest that targeting certain cleaning behaviors could also influence other cleaning behaviors not directly targeted.

METHOD

Setting and Participants

This study was conducted in a ski shop located in the downtown of a Small mountain town. The shop sold skis, ski boots, and outerwear necessary for the sport of skiing. There were two floors of the shop, with ski clothes and accessories in the bottom floor and skis and boots in the top floor. The shop was open daily from 11 am to 5 pm. A typical day consisted of thirty or more customers throughout the day. Merchandise would become dirty or unorganized as customers shopped throughout the store. Participants were employees (n = 7), excluding owners and managers, who received brief training on cleaning the store when initially hired. Five of the seven employees had tenure of over one year. Employees typically worked with a coworker for the entirety of a workday, both opening and closing the shop.

Preliminary Analyses

A hallmark of Organizational Behavior Analysis (OBM) is the analysis of the environmental setting and employee behaviors prior to beginning data collection (Ludwig, 2002; Ludwig & Geller, 2001). The current study used Austin's Performance Diagnostic Checklist (PDC) (2000) and Daniels and Daniels' (2004) PIC/NIC analyses to understand the organizational environment where cleaning behaviors occur, pinpoint the critical behaviors that lead to a clean store, and analyze the antecedents and consequences that may maintain those cleaning behaviors. Three weeks prior to the beginning of data collection the store manager was interviewed using the PDC and PIC/NIC assessments.

Information was gained for the PDC via informal interviews with the store owner and managers due to the small sample size of the store. From the PDC three performance areas were found to be in need of improvement: (1) Proper cash register documentation, (2) Suggestive selling at checkout, and (3) Store cleaning. Store cleaning was chosen by the manager and the research team as the targeted set of behaviors to intervene upon. The employee cleaning behaviors found to be most in need of improvement were zipping jackets, hanging jackets, cleaning mirrors, cleaning the glass countertops, emptying trashcans, vacuuming, and dusting the ski boots.

The results of the PIC/NIC analysis are summarized in Table 1. Existing antecedents for cleaning behaviors included: the presence of a manager, visibility of dirt or dust, and the prompt of another employee

cleaning. In the table, consequences are classified as “positive or negative” (P/N), “immediate” or “future” (I/F), and “certain” or “uncertain” (C/U). Existing consequences for cleaning behaviors were, for the most part, negative, thereby reducing the probability that cleaning would occur. From the PIC/NIC analysis (Daniels & Daniels, 2004) it was determined that the existing antecedents and consequences for cleaning behaviors were not adequate to promote the occurrence of cleaning behaviors.

Antecedents and consequences missing from the environment, which might influence frequent cleaning, were identified. Because no formal training had been offered to employees, they did not know what to clean and how to do it correctly. Additionally, there were no visual prompts near employee stations for cleaning. Employees did not receive feedback about their cleaning behaviors nor were they rewarded or reprimanded for their cleaning behaviors (or lack thereof).

An intervention package was then put together based on the PIC/NIC analysis. Antecedents to be added were task clarification to make up for the lack of cleaning training, a behavior checklist that further described

TABLE 1. Results of PIC/NIC Analysis

	Antecedents	Behavior	Consequences	P/N	I/F	C/U
Baseline	• Store appears dirty • Manager on site • Store about to close • No customers in store	Zipping jackets Hanging jackets Cleaning mirrors Cleaning glass Emptying trashcans Vacuuming Dusting ski boots	• Store is clean • Takes time away from helping customers and socialization with co-workers • Takes time to do • Store ready for business the following day • Requires physical labor	P N N P N	I I I F I	C C C C C
Missing	• Visual prompt to clean • Formal training		• Feedback on cleaning behaviors • Rewards or praise for Cleaning • Supervisor comments or loss of money/job for not cleaning	P P P	I I F	C C U
Intervention	• Task Clarification • Checklist		• Group Graphic Feedback • Written Feedback	P P	I I	C C

Note: Consequences are classified as “positive” or “negative” (P/N), “immediate” or “future” (I/F), and “certain” or “uncertain” (C/U).

the desired behaviors, and when put in a visible place, would serve as a prompt for the behaviors. Consequences to be added were both graphic and written feedback, which would describe to the group the level of cleaning completed over the past week.

Data Collection

Time series measures were collected on the following cleaning behaviors: Jackets Zipped, Jackets Hung Facing Same Direction, Cleaning Mirrors, Cleaning Countertops, Trash Emptied, Vacuuming, and Dusting Boots. Measures of cleanliness were recorded on a data collection sheet, whereby "yes" was checked if observers judged the behavior had occurred and "no" if the behavior had not occurred.

The following criteria were used to determine the occurrence of the behavior: (1) the zipper teeth of 100% of the ski jackets were connected (i.e., jackets zipped); (2) no fingerprints or smudges were apparent on the glass countertops (i.e., countertops cleaned); (3) all five store trashcans were devoid of any debris (i.e., trash emptied); (4) all areas of the store floor were free from debris (i.e., vacuuming); (5) all ski boots dusted (i.e., boots dusted); (6) 100% clothes hangers supporting jackets were facing in the same direction on the clothing racks (i.e., jackets hung correctly); and (7) no fingerprints or smudges were apparent on the store mirrors (i.e., mirrors clean).

Data collection occurred each morning prior to the ski shop opening. Inter-observer agreement data were collected on every fifth day (20% of observations) of data collection. Two authors independently collected data simultaneously throughout the store on these mornings. Inter-observer agreement ranged from 90% to 94% on the 7 behaviors measured.

Design and Procedure

This study was a demonstration project, which took place during the course of 7 weeks and 3 days. An ABC design began with baseline data collected over a 2-week period. Subsequently, an intervention package was implemented consisting of task clarification, performance checklists, and graphic feedback of percentage of completed cleaning behaviors. After an additional two weeks, a second intervention was implemented consisting of daily task-specific feedback specifying cleaning behaviors not performed. Only 5 (i.e., Jackets Zipped, Cleaning Countertops, Trash Emptied, Vacuuming, and Dusting Boots) of the 7 behaviors observed during baseline were targeted during the interventions. The two behaviors were intentionally excluded from the intervention to investigate an occurrence of response generalization.

Task Clarification. The store manager held a task-clarification meeting attended by all employees and specified how to complete the targeted behaviors correctly. Also, the manager explained and distributed an example

of the cleaning checklist. Employees were told that their cleaning behavior was being recorded. However, the manager did not specify how the data were being collected. One of the authors, an employee at the shop, was present for the task-clarification meeting in order to verify that only the five specific cleaning behaviors were mentioned and there was no discussion during the meeting of the two non-targeted cleaning behaviors (jackets hung correctly and mirrors cleaned).

Checklist. A checklist for listing Jackets Zipped, Cleaning Countertops, Trash Emptied, Vacuuming, and Dusting Boots was posted next to the cash register, on the backside of a ski product display. Next to each behavior there were columns representing each day of the week. The employees were to initial next to a behavior once it was completed before closing. This was done daily before the employees left in order to get the store ready for opening in the morning. A new checklist was posted every week.

Graphic Feedback. Graphic feedback, which depicted the prior week's performance, was posted next to the checklist twice during the package intervention (after every 7 observation days). The data used to produce the graph were the data collected by the authors, not the self-reporting from the checklists. Graphs depicted the percentage of cleaning behaviors complete for the past 7 observations. Percentages were determined by adding the total number of occurrences of cleaning behaviors for each day (out of a possible 5 correct behaviors), adding all the correct behaviors for the week, and then dividing by the total number of cleaning behaviors that should have occurred (a possible 35 correct behaviors). These percentages were represented graphically over the two-week period for employees to see their improvement.

Task-Specific Feedback. The second intervention consisted of daily task-specific feedback. Task-specific feedback consisted of a list of specific behaviors not completed from the closing shift the previous day. After making their observations in the morning before the store opened, data collectors listed the tasks that were not completed and posted next to the checklist. This list was replaced daily by a new list throughout the rest of the study. During this intervention weekly graphic feedback was no longer posted.

RESULTS

The study was conducted over a 7-week and 3 days period, with thirtyeight total observations for each behavior. Baseline data were collected over 2 weeks on 7 cleaning behaviors. Baseline averages ranged from 13% to 60% for each cleaning behavior. The two lowest percentages of cleaning behaviors were 13% for both cleaning countertops and vacuuming the store.

Figures 1-5 depict the cumulative occurrences of the five target cleaning

behaviors (i.e., Jackets Zipped, Cleaning Countertops, Trash Emptied, Vacuuming, and Dusting Boots). For each day a behavior was found to have occurred, the line would increase one point up the ordinate. The line otherwise remained flat. A celeration line was added to the cumulative

FIGURE 1. Cumulative incidents of jacket zipped the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.

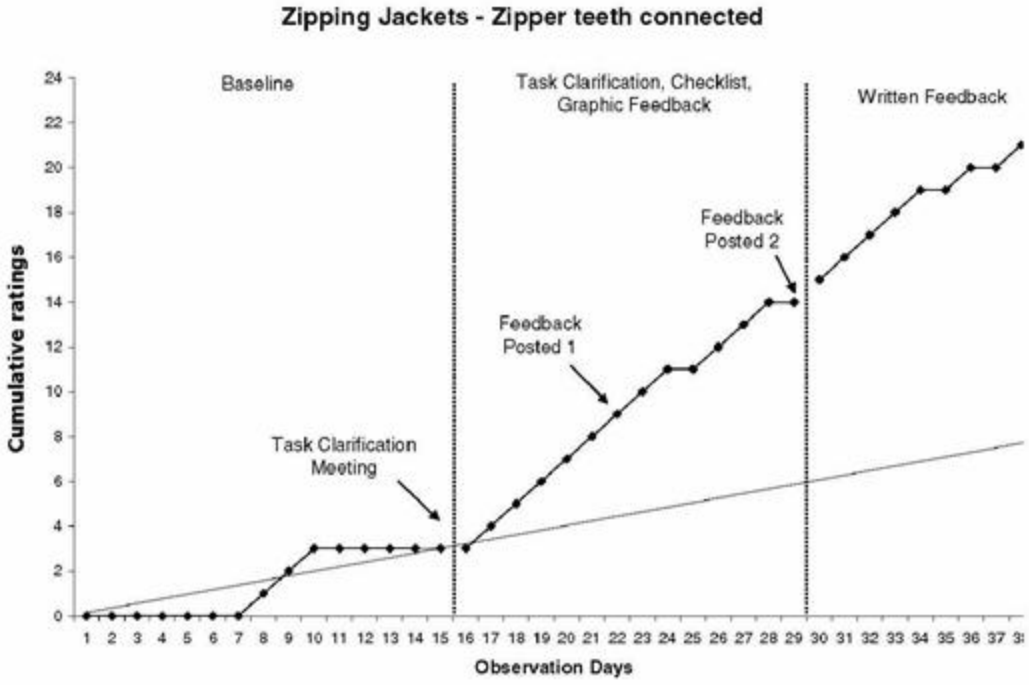
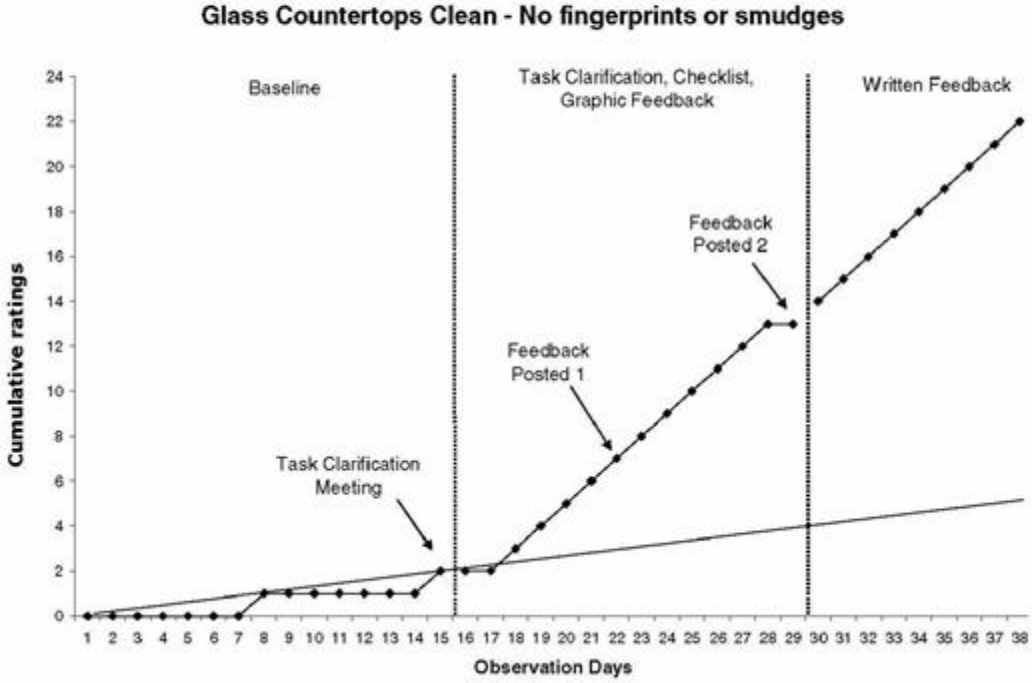


FIGURE 2. Cumulative incidents of cleaned countertops the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.



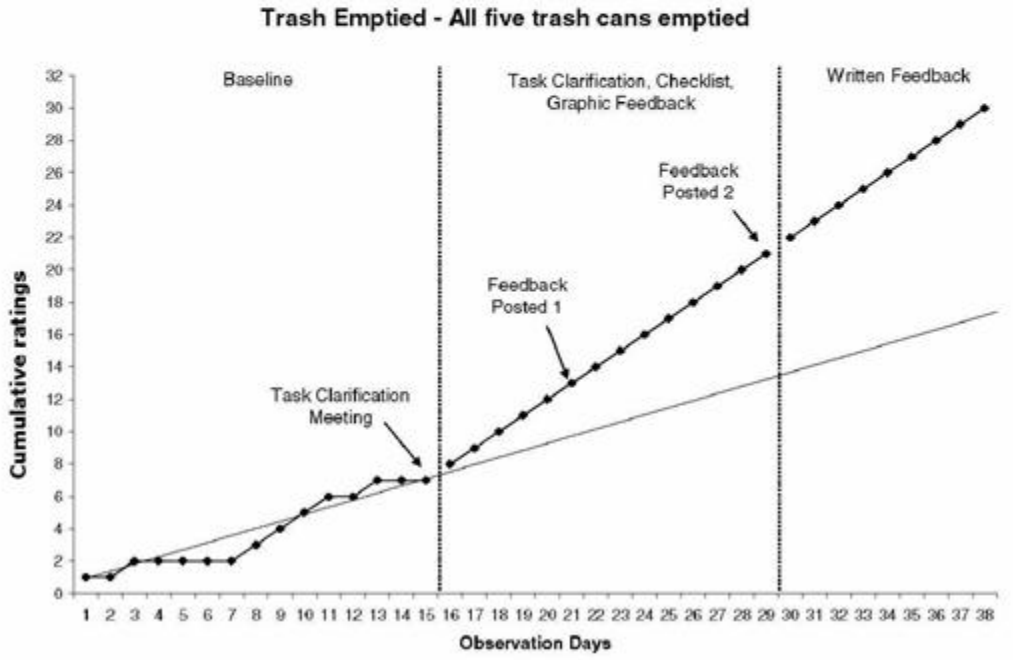
graphs starting at the first point of baseline and crossing through the last point of baseline in order to show an approximation of how much cleaning would continue to occur if no intervention was implemented.

For the first 7 observations, no cleaning occurred for 3 of the 5 targeted behaviors (zipping jackets, cleaning countertops, and vacuuming). The remaining behaviors only had two instances in which some of the cleaning behaviors occurred during the first 7 observation days.

Task Clarification, Checklist, Graphic Feedback

After the implementation of the package intervention, zipping jackets increased from a weekly percentage of 20% during baseline to 79%,

FIGURE 3. Cumulative incidents of emptied trashcans the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.



cleaning countertops from 13% to 79%, trashcans emptied from 40% to 93%, store vacuumed from 13% to 86%, and boots dusted from 27% to 79%. After the first posting of graphic feedback, all 5 targeted behaviors continued to occur daily.

Task-Specific Feedback

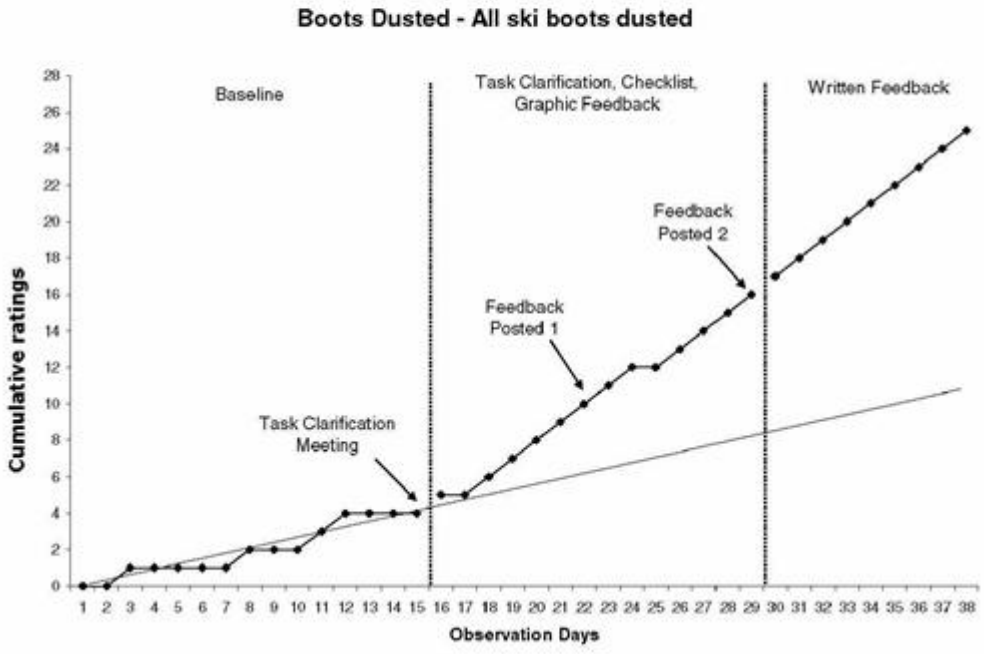
After the second intervention of daily task-specific feedback, all 5 targeted cleaning behaviors continued to occur daily. During this intervention, all cleaning behaviors were completed daily, according to the yes/no scoring. Means for all behaviors increased to 100% except for the behavior of zipping jackets.

FIGURE 4. Cumulative incidents of floors vacuumed the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.

Response Generalization

Two behaviors were not directly targeted by the interventions (i.e., not mentioned in task clarification, on the checklist, in the graphic feedback, not in the task-specific feedback). After the implementation of the package intervention, zipping jackets increased from a weekly percentage of 20% to 79%, hanging jackets from 60% to 86%, cleaning mirrors from 47% to 93%. Further, after the second intervention of daily task specific feedback these non-targeted behaviors increased to 100% daily occurrences. Figures 6 and 7 depict the cumulative occurrences of these two non-targeted cleaning behaviors.

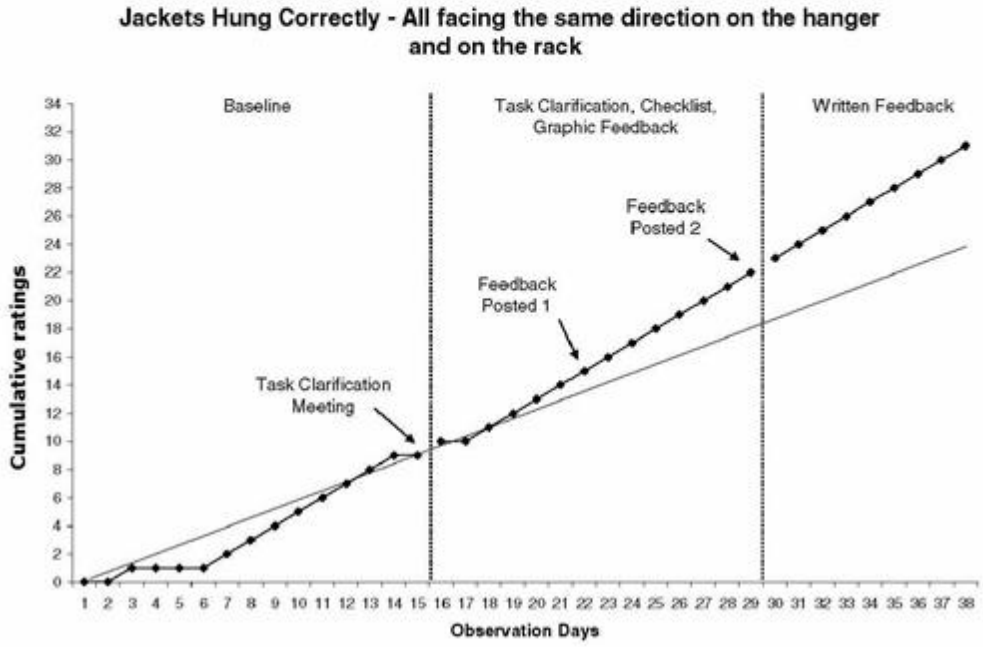
FIGURE 5. Cumulative incidents of ski boots dusted the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.



DISCUSSION

Examination of the baseline data supported the need to improve cleaning behaviors by employees of the ski shop. An increase in nearly all the cleaning behaviors was noticed on the eighth observation day during baseline. This increase was thought to have been a natural response to the fact that there had been few cleaning behaviors for the previous seven days. The growing visibility of dirt was thought to have become a salient prompt for cleaning behaviors. The intervention, which consisted of task clarification, a checklist, graphic feedback, and daily task-specific feedback, was implemented on 5 of the 7 cleaning behaviors. Responses generalized to the other 2 cleaning behaviors not discussed during the meeting. Hanging jackets correctly and cleaning mirrors were not mentioned during

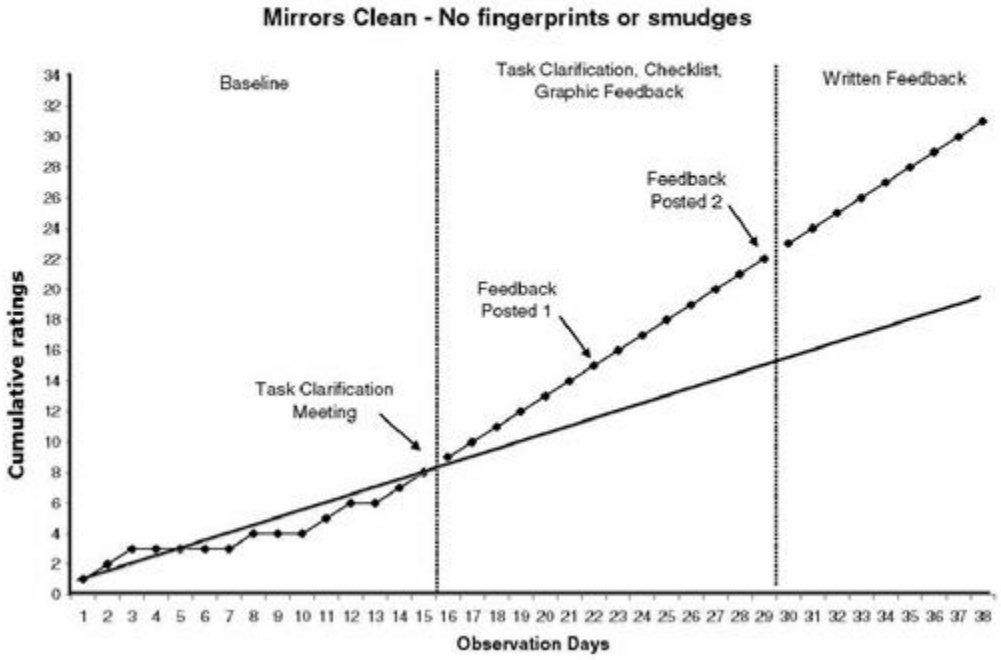
FIGURE 6. Cumulative incidents of ski jackets being hung correctly the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.



task clarification, nor were they listed as cleaning behaviors on the checklist.

With the implementation of the interventions, additional prompts and consequences for cleaning were added to the work environment according to PIC/NIC findings. Combining the task-clarification meeting, which gave all employees uniform definitions of the cleaning behaviors, with the checklist and graphic feedback, may have allowed the employees to self-monitor their cleaning behaviors (Hickman& Geller, 2003; Olson & Austin, 2001). Subsequently, the task-specific feedback may have provided both a consequence for preceding behaviors but also a much more specific prompt for the next day's activities (Ludwig & Geller, 2001).

FIGURE 7. Cumulative incidents of cleaned mirrors the morning after store closing. A celeration line was added to the cumulative graphs starting at the first point of baseline and crossing through the last point of baseline so that one can easily compare baseline performance to that during the treatment phases. Any data above the line during treatment phases represents an improvement over baseline.



After the study was complete, informal interviews were conducted

with employees regarding the interventions. Of those interviewed, all employees reported they “really liked” the task-clarification meeting and suggested having informative employee meetings once a month. Employees also reported liking the checklist, especially its location, which was near the cash register, and felt that it reminded them of their daily cleaning tasks before closing time. Through these interviews, it was discovered that the employees disliked the task-specific feedback intervention. They commented that it made them feel defensive. Even though the employees did not like task-specific feedback, employee cleaning behavior was maintained at the highest percentage during this phase.

A major limitation within the study was the ABC design. Because the 7 employees worked in their shifts in continuously changing groups of 2 or 3 we were not able to create a randomly assigned control group nor were we able to stagger the onset of the interventions across employees in a multiple baseline fashion. Consequently, we had to implement the intervention with the entire group immediately. Thus, our ability to assert

experimental control (Kazdin, 1994) is limited and possible history confounds could not be assessed. Though a multiple baseline across behaviors may have been an acceptable alternative to demonstrate experimental control, we were concerned about attrition of employees. Retail positions have high turnover, so we wanted to limit our time frame to two months.

Another drawback of the method used in this study was that the outcomes of cleaning behaviors were recorded the next day. It was possible that not all of the target behaviors may have been completed each day. If a targeted cleaning area remained clean throughout the day (e.g., no smudges on the countertops), it may not have been necessary to clean that day. Because of these limitations, the results of this study should be viewed with caution and should be considered a demonstration of the possible intervention effects.

A future study at other retail locations should consider the use of an incentive for completing additional cleaning behaviors. At the time of the study employees received a commission for sales completed. An additional incentive might include increasing the commission received for sales (if earned) if 100% of cleaning behaviors were completed for that day. Additionally, individual feedback could be given for employees who close the store. This feedback could be more private and allow for individual employees to gain knowledge of specific behaviors not completed, rather than receiving feedback on a group level.

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